

**Response**

Applicant: Michael R. Krause et al.

Serial No.: 09/980,759

Filed: April 11, 2002

Docket No.: 10002164-2

Title: RELIABLE DATAGRAM TRANSPORT SERVICE

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**REMARKS**

The following remarks are made in response to the Office Action mailed January 13, 2005. Claims 1-20 were rejected. Claims 1-20 remain pending in the application and are presented for reconsideration and allowance.

**Claim Rejections under 35 U.S.C. § 102**

The Examiner rejected claims 1-20 under 35 U.S.C. § 102(b) as being unpatentable over the Request for Comment 793, Transmission Control Protocol (Sept. 1981) (RFC 793) reference.

The RFC 793 reference does not teach or suggest the limitations of the of independent claim 1 of an end-to-end context at the source endnode and the destination endnode storing state information to ensure the reception and sequencing of message data sent from the source endnode to the destination endnode thereby permitting reliable datagram service between the source endnode and the destination endnode.

The RFC 793 reference also does not teach or suggest the method of independent claim 11 of sending message data via a reliable datagram service from a source endnode to a destination endnode in a distributed computer system including storing state information in an end-to-end context at the source endnode and the destination endnode to ensure the reception and sequencing of message data sent from the source endnode to the destination endnode, and sending message data via the reliable datagram service between the source endnode and the destination endnode, wherein the reliable datagram service is controlled by the state information stored in the end-to end context at the source node and the destination endnode.

By contrast, the RFC 793 reference teaches the transmission control protocol (TCP) which employs a reliable connection service between two processes. A similar reliable connection service to communicate between distributed processes is illustrated in Figure 3 and described from page 12, line 15-page 14, line 5 of the Present Specification. The TCP reliable connection service and the reliable connection service described and illustrated in the Present Specification both require an association of a local send buffer or queue and receive buffer or queue (i.e., queue pair (QP)) with one and only one remote QP. In a reliable connection service a non-sharable resource connection must be established between a source

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process and a destination process. The connection establishment and clearing of the TCP reliable connection service is described in Section 2.7, beginning at page 10 of the RFC 793 reference, which states that a connection is fully specified by the pair of sockets at the ends, and the connection can be used to carry data in both directions, that is, it is full duplex.

A reliable connection service, such as disclosed in the RFC 793 reference and disclosed in the Present Specification, requires a process to create a QP for each process which it is to communicate with over a network. Thus, if each of  $N$  host processor nodes contain  $M$  processes, and all  $M$  processes on each node wish to communicate with all the processes on all other nodes, each host processor node requires  $M^2 \times (N-1)$  QPs.

By contrast, the distributed computer system of independent claim 1 and the method of sending message data via a reliable datagram service of independent claim 11 employ an end-to-end context at the source endnode and the destination endnode to store state information to ensure the reception and sequencing of message data sent from the source endnode to the destination endnode thereby permitting reliable datagram service between the source endnode the destination endnode. A reliable datagram service is illustrated in Figure 4 and described beginning at page 14, line 6-page 15, line 22 of the Present Specification. In addition, embodiments of reliable datagram services are described in more detail beginning at page 28, line 6 and correspondingly illustrated in Figures 12 and 13 of the Present Specification.

The end-to-end context at the source endnode and the destination endnode as recited in independent claim 1 and independent claim 11 permit reliable datagram service between the source endnode and the destination endnode which can greatly improve scalability because the reliable datagram service is effectively connectionless. Therefore, an endnode with a fixed number of QPs can communicate with far more processes and endnodes with a reliable datagram service than with a reliable connection service, such as disclosed in the RFC 793 reference and as disclosed in the Present Specification. For example, as stated above, if each of  $N$  host processor nodes contain  $M$  processes, and all  $M$  processes on each node wish to communicate with all the processes on all the other nodes, the reliable connection service disclosed in the RFC 793 reference requires  $M^2 \times (N-1)$  QPs on each node. By comparison, the connectionless reliable datagram service of the distributed computer system claimed in independent claim 1 and the method claimed in independent

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claim 11 only requires M QPs + (N-1) end-to-end contexts on each node for exactly the same communications.

Therefore, the RFC 793 reference does not teach or suggest the distributed computer system of independent claim 1 or the method of independent claim 11. In addition, dependent claims 2-10 further define patentably distinct independent claim 1, and dependent claims 12-20 further define patentably distinct independent claim 11. Therefore, dependent claims 2-10 and 12-20 are also believed to be allowable.

Therefore, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(b) rejection to claims 1-20, and request allowance of these claims.

**CONCLUSION**

In view of the above, Applicant respectfully submits that pending claims 1-20 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-20 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

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Respectfully submitted,

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**CERTIFICATE UNDER 37 C.F.R. 1.8:** The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendments, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 13 day of April, 2005.

By 

Name: Patrick G. Billig